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Animal diversity of nauradehi wild life sanctuary Sagar (M.P.)

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ABSTRACT

Wild life conservation includes all human efforts to preserve wild animals from extinction. It involves the protection and wise management of wild species and their environment. Some species have become extinct due to natural causes but the greatest danger to wild life result from human activities. Thus we ourselves have created this need for wild life conservation. The progress of man throughout has been beneficial for the human race but it is the wild that has suffered through the years. Invention of sophisticated weapons, industrialization, urbanization, ever increasing human population have been some of the major causes for the dwindle of our once rich wild life resource. Hunting, clearing of forests, draining of swamps and damming of rivers for irrigation and industry, this is what we apprise of man's progress. These activities have vastly reduced the natural habitats of our wild life and many species are endangered or nearly extinct.

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1. Introduction

Nauradehi wild life sanctuary is a unique protected area where in two major river basins of India are encompassed, namely the Ganges and Narmada. There fourths of the falls in the Ganges (Yamuna) and one fourth in the Narmada catchment. This protected area is located in three districts of M.P. namely Sagar, Damoh and Narsingpur with Sagar as its Head quarters thus it is one of the unique protected area where such a great

transitional biodiversity exist. The forest is continuous and has similar ecological and geomorphological characters in the three districts. Mishra (1961), worked on ecological studies of some forest of Sagar Madhya Pradesh.

Water sources are in equal distribution throughout the sanctuary except in the tract in south-west Nauradehi and Dongargaon ranges. The tract in the middle of the sanctuary has plenty of water sources. The number of water sources per unit area decrease towards north and south. In east the Biarma river acts as the major source of water, Chevla tank is the important water sources in north. Elsewhere Jhiriyas form the important water sources.

The sanctuary is situated mostly on Vindhyan range of hills. The tract consists of series of level or undulating plains transversed by broken ranges of low flat topped hills. Vishwakarma, (1986) geographical studies of diet and health in Sagar city.

1.1. Climatic conditions

The climate of Sagar is seasonal with three well marked seasons viz. rainy, winter and summer on the basis of temperature, rainfall and relative humidity.

According to climatic condition, rainy season in Sagar begins from the middle of June and continues up to September. Annual rainfall in Sagar during study period March 2012 to July 2013 was recorded. Rainfall was respectively maximum in July, August and mid September, Thus during the one consecutive years viz March 2012 to July 2013 total maximum rainfall recorded was 11000C.

1.2. Temperature

On the basis of past one year temperature record, it is moderate with average minimum and maximum temperature of 13.420C and 41.400C respectively. In summer the temperature goes up to 470C and in winter are of high magnitude, mostly mean maximum and minimum temperature range from 41.400C to 11.440C respectively.

1.3. Relative humidity

Humidity is an important factor which is recorded with the growth of herbaceous layer, micro flora and disappearance of dead plant material. It was higher in rainy season, moderate in winter and least in summer season.

2. Materials and methods

The forest ecology with respect to vegetation, soil texture and climatic condition has observed. Field studies were conducted on a full time basis. All these areas were visited regularly from March 2012 to July 2013. The observations presented in this paper are based on direct observation as well as identification and analysis of field symptoms and keeping the wild animals under observation for a length of time. The field observations were made in certain definite points in the forest reserves. Time of observation made in certain definite points in the forest reserves. Time of observation was restricted to few hours in the morning and evening as well as.

Technique and procedure undertaken was is mainly based on keen observation to locate and identify the specific animals. Animal evidences are normally concentrated along the routes frequently visited by wild animals. Wild animals move along selected routes in the forest. Observations were facilitated by use of binoculars and cameras, diary and pen. Most efficient method of observing animals directly was from trees or Machans, Basic field observation were based on direct observations, identification and interpretation of field symptoms.

The Indian Board for wild life describes a protected area as an area which is (i) to afford special protection to wild life in order to enable to re-establish themselves (ii) to afford protection to wild life in and around large towns and sacred places. Such area may be constituted as protected areas by an order of the government who may also fix the degree of protection and period of protection (may be temporary or permanent).

Research on water quality is made by prospective epidemiological and analytical method. Is performed within months from May to June '12. The sampling plan was designed to expand the analysis of drinking water in all residences, respectively from two samples for each watershed. Sampling was conducted for 21 days, taking an average of 3.1 samples per day. Three teams are engaged in sampling. Samples were transferred within 4 to 6 hours, depending on the terrain, to laboratories for microbiological and physicochemical analysis. To facilitate research, the region of Dragash have divided into five areas; Opoja, Brezne, Dragas, Brod and Restelicë. In this way

including villages that lie mainly in these areas and have closer communication. Sampling was carried out according to the WHO manual on plastic bottles prepared in advance.

3. Results

To conclude the study of fauna diversity shows that many wild animal which were found in these forest areas many years back have now vanished or reduced to a very few due to human interference. Unprotected areas of forest also need to be protected so that the fauna diversity of these regions is conserved.

The forests in the sanctuary are heterogeneous in composition, extent and distribution. They occur in extensive compact tracts as well as interspersed variety informs of structural development. The wide diversity occur not only in extent and distribution of forest but arises also due to seasonal variation in the phenology of the numerous species constituting the deciduous mixed forest crops. These conditions provide a variety of food and cover throughout the year for the animals. Thakur (1994), studies on the biology and ecology of chital wild life in relation to feeding habitat Nouradehi forest area.

Main vegetation consists of *Abrus precatorius* Ghumchi, Sweet Kakai *Abutilon indicum*, Khair (*Acacia catechu*), Safed babul (*Acacia leucophloea*), Babul (*Acacia arbica*), Kuppi (*Acalypha indica*), Bel (*Ageratur conyzoides*), Hathisengar (*Agave Americana*), Sohkhia (*Ageratur conyzoides*), Simaro (*Ailanthus excelsa*), Dadmari (*Ammannia baccifera*), Kalmegh (*Andrographis paniculata*), Sitaphal (*Annona squamosa*), Dho (*Anogeissus latifolia*), Kardhai (*Anogeissus pendula*), Dudhi (*Asclepias curassvica*), Satawar (*Asparagus recemosus*), Neem (*Azadirachta indica*), Kachnar (*Bauchinia purpurea*), Asto (*Bauchinia recemosa*), Lajbanti (*Biophytum sensitivum*), Punarnava (*Boerhavia diffusa*) Semal (*Bombax ceiba*), Salai (*Boswellia serrata salai*), Kajja (*Bridelia squamosa*), Khumbhi (*Careya arborea*), Karonda (*Carissa carandas*), Amerbel (*Cuscuta reflexa*), Shisham (*Dulbegia sisso*), Tendu (*Deispyres exculpta*) Gular (*Ficus recemosa*), Pipal (*Ficus religiosa*), Kakal (*Ftacourtia indica*), Papara (*Gardenia latifolia*), Dudhi (*Holarrhena pubescens*), Gunja (*Lannea coromendelica*), Maulsari (*Mimusops elegi*), Kaim (*Mitragyna parviflora*), Kamal (*Nelumbo nucifera*), Bijosal (*Pterocarpus marsupium*), Sagone (*Tectona grandis*), Saj (*Terminalia alata*), Arjun (*Terminalia arjuna*), Barra (*Terminalia chebula*) and Jamun (*Syzygium cumini*).

The main fauna observed in the Nauradehi sanctuary consisted of amphibians reptiles, aves and mammals.

Amphibians: Toad (*Bufo melanosticus*) Rana (*Rana tigrina*) Tree frog (*Rhacophorus*), were observed near of pond water.

Reptiles: Testudo (*Testudo tactun*) was observed near water. Calotes (*Calotes calotes*), were observed in trees. Wall Lizard (*Hemidactylus maculates*), were observed in Machan wall. Python (*Python molonus*), Viper or Dobia (*Vipera russeli*), Dhanman or rat snake (*Ptyas mucosin*), Krait (*Bungarus*), Sand boa (*Gonglophis conicus*), Tree snake (*Leptophis ahactulla*) were observed on land.

Aves: Pigeon (*Columba livia*), Parrot (*Pisttacula eupatera*), Quail (*Eudynamys livia*), Indian Lorikeet (*Loriculus vernalis*), Crow (*Corvus splendens*), Wood pecker (*Dendrocapus mahrattensis*), were observed in trees. Indian pitta (*Pittabra chyura brachyura*), were observed on shrubs. Baya or weaver bird (*Ploceus philippinus weaver*), were observed on Pipal, Khair and Arjun trees. Owl (*Bubo livia*), were observed on shrubs and trees. Anus or Duck (*Anus platyrhncos*), Sarus crane (*Grus grus*), Kingfisher (*Alcedo meninting*), were observed near pond water. Indian Sandgose (*Pterocles exustus erlangeri*), were observed in winter season.

Mammals: Chital (*Axis axis*), Nilgai (*Boselaphus tragocamelus*), Sambhar (*Cervus unicolor*), Black buck (*Antilope cervicapra*), Chinkara (*Gazella gazella*), Indian bison (*Boselaphus gaurus*), Rat (*Golunda ellioti*), Squirrel (*Funambulus palmarum*), Hare (*Lepus californicus*), Bat (*Pteropus*), Hyena (*Hyaena hyaena*), Jackal (*Canis auresus*), Tiger (*Panthera tigris*), Leopard (*Panthera pardus*), Grey wolf (*Canis lupus*), Wild cat (*Felis sylvestris*), Mongoose (*Herpestes edularsi*), Red and black face monkey (*Semnopithecus entellus entellus*) and (*Presbytus entellus entellus*) and Wild pig (*Sus cristatus*).

In Nauradehi wild life sanctuary the dominant animal species are Black buck (*Antilope cervicapra*), Sambhar (*Cervus unicolor*), Chital (*Axis axis*), Nilgai (*Boselaphus tragocamelus*), Chinkara (*Gazella gazella*), Jackal (*Canis auresus*), *Hyaena (Hyaena hyaena)*.

4. Conservation aspects

The habitat loss due to following factors viz: fire, illicit felling, over-grazing and natural calamities has resulted in the loss of diversity. Endangered species have particularly suffered from lack of effective pollinators, viable seed formation and natural regeneration, disease etc. Resulting in the depletion and erosion of the diversity in them.

No conservation strategy can be effective unless taken care of the basic need of the local communities. A good deal of biodiversity is also protected through folk tradition. The establishment of Nauradehi wild life sanctuary is an appropriate step in promoting in-situ conservation of wild animals and plant genetic resources at the government level.

The Nauradehi wild life sanctuary is rich by both floral as well as faunal diversity. Due to several biotic and abiotic factors there is a risk of its deterioration. So following conservation measures are being proposed which may be helpful in protecting and conserving the biodiversity of Nauradehi wild life sanctuary. Though, the Central and State Government has taken a step for the conservation as they declared the Nauradehi wild life sanctuary as protected area. In spite of that there is lacune and it should be removed.

Displacement of enclave villages; the fifteen villages are located in side the sanctuary, should be rehabilitate outside the protected area by providing the suitable compensation. This will minimize the problem of grazing and cattle pressure on flora of sanctuary. The harmful weed flora should be uprooted, burnt at vegetative stage and replaced by grasses and bamboos.

Tourist should not be allowed to visit alone, ecological sensitive areas. Diamond mining and stone quarries are located outside the reserve boundary. Thus environment's guidelines at the industrial site should maintain a minimum distance of 25 km. From ecological sensitive areas. The mine also violates Section 2 of Forest Conservation Act, 1986. The huge amounts of over burden are dumped around the forest land nearer to protected area and it is completely barren land. Therefore the indigenous plant species should be planted on over burden dumps. The nallah carrying polluted water with heavy metal or washout water of Diamond Mine at Majgaon flowing through in the Nauradehi wild life sanctuary which should be diverted from protected area in favour of wild-life as well as plant species. Diamond mining and stone quarries should be operated by scientific manner, without much destruction of vegetation and minimum disturbance to wild life.

Considering the prevailing situation and diverse plant wealth of the area, emphasis must be laid on the conservation measures, both in-sit and ex-situ. The in-situ approach however needs priority for the protection of endangered species, which have already lost the diversity and are not able to adjust. For effective conservation of forest diversity in-situ preservation plots in different forest ecosystems can be established. Preservation plots are precise example of local level management norms of biodiversity plots as "demarcated forest area set aside in perpetuity for the preservation of the forest with no human interference beyond what is necessary for their protection and maintenance".

The preservation plots serves as "Ecological Reference Centre or Ecological Labs" for studying natural ecological processes in isolation from human interference and pressure, thus dealing with wise management of biodiversity. Research on various ecological habitats of endangered species should also be undertaken. Afforestation of fuel and fodder species under social forestry programmes may be encouraged in the surrounding areas so that the pressure on protected forest is checked. Studies on reproduction behaviour and population dynamics of threatened and rare species should be carried out over a period of time in in-situ. The local administration and the protected area management should initiate a programme or develop a strategy to examine conservation status of vegetation, communities, habitats and species that are threatened and need protection.

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